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Uniform etching of semiconductor comprising titanium-tungsten layer - by
use of a buffered hydrogen peroxide etching soln. having specified pH
value

Patent Assignee: PHILIPS GLOEILAMPENFAB NV (PHIG); PHILIPS CORP NV (PHIG
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Inventor: VAN OEKEL J J; VANOEKEL J J

Number of Countries: 008 Number of Patents: 008

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
EP 292057	A	19881123	EP 88200945	A	19880511	198847 B
NL 8701184	A	19881216	NL 871184	A	19870518	198902
JP 63305518	A	19881213	JP 88117153	A	19880516	198904
US 4814293	A	19890321	US 88191299	A	19880506	198914
JP 90057339	B	19901204	JP 88117153	A	19880516	199101
EP 292057	B1	19920909	EP 88200945	A	19880511	199237
DE 3874411	G	19921015	DE 3874411	A	19880511	199243
			EP 88200945	A	19880511	
KR 9709862	B1	19970618	KR 885663	A	19880516	199945

Priority Applications (No Type Date): NL 871184 A 19870518

Cited Patents: Jnl.Ref; JP 55011120; SU 568986; US 3841931; US 4443295

Patent Details:

Patent No	Kind	Lan Pg	Main IPC	Filing Notes
EP 292057	A	E	5	

Designated States (Regional): DE FR GB IT NL

US 4814293 A 4

EP 292057 B1 E 6 H01L-021/31

Designated States (Regional): DE FR GB IT NL

DE 3874411 G H01L-021/31 Based on patent EP 292057

KR 9709862 B1 H01L-021/31

Abstract (Basic): DE 3874411 G

A semiconductor device, in which a marked titanium-tungsten layer
on a substrate must be etched, is mfd. by a process including etching
the titanium-tungsten layer in an etching soln. of hydrogen peroxide in
water.

The novelty is that the pH of the etching soln. is adjusted by
means of a buffer to a value between 1 and 6.

Pref. the buffer comprises ammonium as the cation and acetic or
citric acid as the acid, while the concn. of hydrogen peroxide in the
etching soln. is pref. 2.5-30%.

Specifically the buffer comprises acetic acid and ammonium acetate.

USE/ADVANTAGE - Provides homogeneous etching and uniform under-etching.

EP 292057 A

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comprises ammonium as the cation and acetic or citric acid as the acid, while the concn. of hydrogen peroxide in the etching soln. is pref. 2.5-30%. Specifically the buffer comprises acetic acid and ammonium acetate.

USE/ADVANTAGE - Provides homogeneous etching and uniform under-etching.

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Abstract (Equivalent): EP 292057 B

A method of manufacturing a semiconductor device, in which a titanium-tungsten layer is provided on a substrate and a layer for masking during etching of areas of the titanium-tungsten layer is provided on this layer, after which the unmasked areas of the titanium-tungsten layer are etched in an etching solution of hydrogen peroxide in water, characterised in that the pH of the etching solution is adjusted by means of a buffer to a value between 1 and 6.

(Dwg. 1/1)

Abstract (Equivalent): US 4814293 A

Semiconductor device is formed from a Si substrate (1) produced by formation of Si oxide layer (3), with openings (4) on a semiconductor body of Si (2). A Ti-W layer (5) is provided on the substrate and an Al layer. (6) is masked during etching of the Ti-W layer is provided on this The Ti-W layer is etched in an etching soln. of 25-30% H peroxide in water, adjusted by a buffer to a pH of 1-6. Cation used in the buffer is ammonium and acid used is pref. an organic acid, partic. acetic acid or citric acid. Pref. buffer is acetic acid and ammonium acetate. ADVANTAGE - Homogeneous etching through maintenance of constant pH.

(4pp)

Title Terms: UNIFORM; ETCH; SEMICONDUCTOR; COMPRISE; TITANIUM; TUNGSTEN; LAYER; BUFFER; HYDROGEN; PEROXIDE; ETCH; SOLUTION; SPECIFIED; PH; VALUE

Derwent Class: L03; M14; U11

International Patent Class (Main): H01L-021/31

International Patent Class (Additional): C23F-001/26

File Segment: CPI; EPI

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Manual Codes (EPI/S-X): U11-C05D3; U11-C07B; U11-C07C2; U11-C07D1

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